# Institutional Status Review 580/Information Systems Center

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**May 24, 2001**

# Agenda

- ➢ **GOOD NEWS**
- ➢ **TECHNOLOGY HIGHLIGHTS**
- ➢ **PROJECT/ISC SUPPORT**
  **(Not Reported Elsewhere)**
- ➢ **OUTREACH/PARTNERING**
- ➢ **INSTITUTIONAL STATUS**
  - – **Papers, Conferences, and Seminars**
  - – **Personnel**
  - – **ISO 9000 QMS & CMM**
  - – **IT Security**
- ➢ **TOP ISSUES**
- ➢ **SPECIAL PRESENTATION**
  - – **Scientist Expert Assistant**

# ISC Good News

➢ **The Scientist's Expert Assistant (SEA)/588 was selected as the Goddard nomination for the NASA Software of the Year Award**

➢ **ISC personnel are either PI or Co-PI on 10 of the final 14 Letters of Intent to the CIO pilot proposal process at GSFC**

➢ **584/ULDB Flight software performing nominally in ULDB field checkouts - Flight has not yet occurred**

➢ **The EO-1 team won a Quarterly Team Work Achievement Award last quarter, submitted by Dan Mandl/584**

# ISC Good News

➢ **Tom Weber/585 successfully brought to completion the Critical Design Review(CDR) for the Resume Management project under the new IFMP**

  – Roll-out at GSFC is targeted for mid-June

➢ **Debbie Sharpe/585 was selected to receive one of the NASA Chief Financial Officer's yearly awards for Improving Financial and Resources Management**

  – Her specific contribution is for the development of and transition into operations of the Agency Brio Pilot Program under the IFMP program

➢ **Code 586 was awarded $80K ESTO funding for studying how to improve 14-day weather forecasts**

# ISC Technology Highlights

| Technology Activity/Project | Customer | Lead Code(s) | Major Accomplishments/Highlights/ Comments | Status | | | |
|---|---|---|---|---|---|---|---|
| | | | | Tech Issues | Schedule Issues | Cost Issues | Staffing Issues |
| ST-5 | | 582 | The MAP FSW to be used for ST-5 has been rehosted to the RTEMS Real-Time Operating System from VxWorks.<br>– RTEMS is Open Source (free) vs VxWorks which is expensive & historically provides poor customer support. | | | | |
| Ikonos, LandSat 7, Modis Images Data | | 584 | Lori Perkins and The Scientific Visualization Studio(SVS) team created over 20 animations in support of Earth Day 2001. These animations were created by georeferencing and color correcting data from 3 different satellites. One of these animations, Zoom-out from Washington DC, was submitted and accepted at the Sigraph 2001 conference. These zooms were shown on every major news station in the 40 largest news markets in the US. The SVS also created animations for African Dust, Wolong Reserve Deforestation, Rondonia Deforestation, and Aral Sea Evaporation stories. | | | | |

| Activity | Issue Code | Issue | Action |
|---|---|---|---|
| | | | |

Legend: T=Technical; Sc=Schedule; C=Cost; S=Staffing

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| | | 584 | Bob O'Brien has completed development of the first phase of a VAX to SGI FORTRAN converter. (Hubble still has legacy FORTRAN code on VAX systems). It has been used to convert all the assigned modules in the image. This tool can be used for future FORTRAN code conversions. | | | | |
| Imager for Magnetopause-to-Aurora Global Exploration (IMAGE) | Science Team | 586 | Evelyn Ho released new software for supporting the LENA Science team with custom plot generation capability, custom text dump capability, and tools to monitor the instrument's power supplies. | | | | |
| Image2000 | | 588 | The Image2000 team received 2 requests for the source of the software. One from JPL and one from code 740 (NGST). Both requests have been routed through the tech transfer office and the Patent office, and signed agreements between those parties and Image2000 now exist. | | | | |

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| The Instrument Remote Control (IRC) | | 588 | Demonstrated the IRC to Jan McGarry and Phil Dabney of code 920.3 and was well received. The intent is to potentially use IRC for the SLA 03 instrument, currently funded to be a hitchhiker on a future space shuttle flight. | | | | |
| Jini Object Information Network (JOIN) | | 588 | The JOIN project completed the first version of the resource cataloging tool. This tool will be used by first by the EarthGazer digital library to catalog image resources. | | | | |
| Scientist's Expert Assistant (SEA) | | 588 | The SEA tool Simulation Facility (SF) prototype release 5 has been completed. This release is the first main release of the SF which will allow the user to get a realistic idea of what the observation will produce before proposal submitted. This will allow for fewer wasteful observations and more accurate results. | | | | |
| Goal Oriented Commanding (GOC) | | 588 | The GOC Project held the Concept of Operation and Requirements Review, a SOMO milestone. | | | | |

| Activity | Issue Code | Issue | Action |
|---|---|---|---|
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# Project/ISC Support

➢ **SORT - Software Optimization and Reuse Technology**

– Program nearing completion of first Spacecraft Trending pilot, staffing second Instruments pilot

  • Report was delivered to Congress to the Honorable Alan Mollohan

➢ **SEL - Software Engineering Laboratory**

– It has been resolved (Milt Halem action from Al Diaz) that:

  – The SEL will remain as a GSFC activity

  – The SEL will remain in Code 581

  – The research areas will be broadened and funded by winning proposals

  – The Software Engineering Workshop will continue but it will be an IEEE conference

  – The IT Service Pool will provide a very low level of institutional funding

# Project/ISC Support

➢ **SORCE - Solar Radiation and Climate Experiment**

– Ken Lehtonen served as a member of the SORCE Integrated Independent Review Board for the SORCE MORR held at the Laboratory for Astronomy and Solar Physics (LASP) in Boulder, CO

➢ **AEDOS II - Advanced Earth Observing Satellite**

– Ron Forsythe supported an ADEOS II Network Security Workshop at JPL in Pasadena, CA
  - Key result was the formation of a Security Working Group that will continue to work security issues through the life of the project
– Ron also participated in the Sixth ADEOS II Joint Program Meeting in Tsukuba, Japan, on March 27, 2001 and ADEOS II working level meetings at the Alaska SAR Facility on April 2 & 3, 2001

# Project/ISC Support

➢ **STANDARDS**

–  Jim Pritchard continues to participate in a number of standards activities:

- Participated in GSFC "Internet in Space Peer Review Team" and provided input to the final report and recommendations

- Participated in CCSDS International Panel 3 WG1 and WG2/3 meetings in Greenbelt March 27-30, 2001

- Submitted a proposal for the development of CCSDS "SCPS Ground and Space Gateways" as a follow on to the British Space Technology Research Vehicle (STRV) Flight Protocol Experiment to the GSFC SOMO Technology Program

- Participated in a NASA CCSDS Panel 1A Technical Interchange Meeting

- Participated in a CCSDS NASA Technical Advisory Group Meeting

- Participated in GSFC Technical Standards Coordination Working Group Meetings

# ISC Outreach/Partnering

➢ **ISC(Mary Ann Esfandiari & John Donohue) led the development and hosting of the 3rd Annual GSFC-JPL Quality Mission Software Workshop in Williamsburg, VA, April 24-26, 2001**

➢ **Barry Nims/584 arranged for an STS-102 launch pass for a busload of students from Lynn University who are in a special program for students with learning and other disabilities**

➢ **Susan Olden/586 received a certificate of appreciation for participating as an algebra tutor in the Oaklands Tutoring Program for the 2000-2001 school year**

# ISC Outreach/Partnering

➢ **Jeanne Behnke/586 is mentoring 5th and 6 graders at Prince George's county middle and elementary school as part of Project Starshine (see http://www.azinet.com/starshine/)**

➢ **Many participated in "Take Our Daughters to Work Day"**

  – Several members of 584W organized sessions on programming robots - Working in teams, the children successfully programmed LEGO robots to maneuver through obstacle courses

  – Steve Kempler/586 led a tour of the GES DAAC for approximately 25 daughters and sons

# ISC Institutional Status

## ➢ Papers, Conferences, and Seminars

– Code 581/588 supported the Object Management Group (OMG) Space Domain Task Force meeting in France this month - made significant progress in completing a database RFP, and assumed leadership for developing a RFP on a generic application interface standard

– Jonathan Gal-Edd/581 presented "Selection of a Ground Segment for the Next Generation Space Telescope (NGST) Flight Demonstration (Nexus) Conference of "Reducing the Cost of Mission Operations" at JHU APL April 24-27, 2001

– Sally Godfrey/583 & Ken McGill/IV & V Facility, representatives of the NASA Software Working Group, gave a presentation on the deployment and status of the NASA Software Metrics Program at the weekly NASA Headquarters CIO telecon

– John Donohue/584 presented branch's work on Biometric authentication technologies to Lee Holcomb at his request

# ISC Institutional Status

## ➢ Papers, Conferences, and Seminars (Continued)

– Steve Bailey/584 is co-author on just published paper in Journal of Geophysical Research, Vol. 106, No. C3, Pages 4639-4654, March 15, 2001 titled "Measured Changes in Ocean Surface Roughness Due to Atmospheric Boundary Layer Rolls" by D. Vanemark, P.D. Mourad, S.A. Bailey, T.L. Crawford, C.A. Vogel, J. Sun, and B. Chapron

– Barbara Pfarr/584 chaired a session on "Dynamic and Stochastic Real-Time Systems" at the IEEE Workshop on Parallel and Distributed Real-Time Systems in San Francisco, CA. This technology has potential uses in future constellation missions

– Barbara Pfarr/584 taught a session on "Software Management" at the Goddard Technical Managers Training at Wallops - 4 Engineers from 584, (2 from Greenbelt, 2 from Wallops) were attending the course

# ISC Institutional Status

## ➢ Papers, Conferences, and Seminars (Continued)

– Jeff Lubelczyk/586 served as a co-chair and presented the project management CMMI process areas for the CMMI session of the JPL/GSFC Quality Mission Software Workshop

– Stephanie Nickens/586 attended the Ground System Architectures Workshop (GSAW) sponsored by the Aerospace Corporation in El Segundo, CA, and shared information about EDOS's current development effort, newer technologies, useful development tools, different approaches and ideas for improving the development process

– Steve Kempler/586 was invited and attended the Department of Transportation/NASA Joint Program on Remote Sensing Technology Application to Transportation, Executive Briefing

# ISC Institutional Status

## ➢ Papers, Conferences, and Seminars (Continued)

- Ben Kobler/586 hosted the 6th AMASS Users Group meeting at the Hyatt Islandia Hotel in San Diego
  - Presentations and discussions included an Advanced Digital Information Corporation roadmap and shared experiences by NASA/GSFC, NSA, and other participants
  - Another meeting is planned for April 2002
  - For more information see: http://esdis-it.gsfc.nasa.gov/amassug/

- Jeanne Behnke/586, Rich Ullman/586 and Karen Moe/700 coordinated an ESTO/ESDIS XML Workshop where various attendees presented their work on XML DTDs, XML Schema, parsers, conversion tools, processes, testing, lessons learned, etc... During breakout sessions, the attendees discussed ways to improve techniques, tools, collaboration, and future directions

➢ **Papers, Conferences, and Seminars (Continued)**

– Ben Kobler/586 and John Berbert/586 participated in the 18th IEEE Symposium on Mass Storage Systems in San Diego, CA, April 16-20, 2001

- Ben Kobler/586 served as Vendor Expo chair and as session chair
- John Berbert/586 also served as a session chair
- This conference was held in cooperation with the 9th NASA Goddard Conference on Mass Storage Systems and Technologies
- Approximately 350 attendees from the US, Europe, and Asia participated in this 4-day event, that included tutorials, paper presentations, a poster session, and a vendor expo

– Jeanne Behnke and Karen Michael/586 coordinated and led three, 1-day EOS Tools Training sessions at JPL, May 1-3, 2001

- The sessions were focused on training the AIRS and MISR Science Teams on use of EOS Tools for data access and manipulation

# ISC Institutional Status

## ➢ Personnel

- – Open Positions
  - 581 -    Ground Operations Senior Engineer
  - 582 -    Associate Branch Head, Flight Software Systems Expert,
    
    2 Experienced Terms, 2 Fresh Outs
  - 583 -    Planning & Scheduling Expert
  - 586 -    Large Data Systems Expert, 1 Fresh Out
  - 587 -    Branch Head, Science Information Systems Expert, 2 Fresh Outs
  - 588 -    IS Technology Expert, 1 Fresh Out

- – New Hires/Conversions
  - 582/Damon Stewart accepted a freshout position, started April 23, 2001
  - 587/Jelena Marshak accepted a freshout position, started May 7, 2001

# ISC Institutional Status

## ➢ Personnel (Continued)

- GSFC Departures
  - 581/Joseph "Mark" Simons resigned to join industry
  - 582/Todd Miller resigned to join industry
  - 582/Mike Tierney resigned to join industry
  - 582/Loc Luu resigned to join industry
  - 583/Carla Matusow resigned to pursue personal interests

- Transfers within GSFC
  - 582/Kequan Lu transferred May 20, 2001 from GNCC as Associate Branch Head
  - 582/Susanne Strege transferred April 22, 2001 from Code 573
  - 583/John Bristow transferred March 25, 2001 from Code 571

# ISC Institutional Status

## ➢ 01 Personnel Summary to Date

- FY01 Personnel Losses:
  - Outside GSFC:   15          Within GSFC:   2
- FY01 Gains
  - Hire Actions Completed:          14
  - Hire Actions in Progress:          13
  - Hire Names Identified:          13
  - Total:          40

Current FTE Status: 298   FTE Targets - FY01:  299  FY02:  304  FY 03:  289

# ISC Institutional Status

## ➢ ISO 9000 QMS & CMM

– Sally Godfrey/583 attended a seminar on the Capability Maturity Model (CMM) by Merant and the Software Productivity Consortium, which focused on how to get started on process improvement using the CMM model and demonstrated some available tools to assist in the process - She also attended a Software Engineering Institute class on the Capability Maturity Model Integrated (CMMI), which provided a knowledge background that will be necessary to work on the development of the Center-wide process improvement plan

# ISC Institutional Status

## ➢ IT Security

– ISC developed an internal process for handling security incidents

– Richard Schneider/585 is currently in the process of producing an automated vulnerability scanning and reporting system
  • The resulting system will accommodate the many NASA/GSFC specific requirements (which have been identified over the last 9 months) during the CIO vulnerability scanning and reporting process
  • This activity is funded under last year's CIO pilot proposal process.

➢ **SOMO Funding Crisis**

– SOMO has decided not to fund any mission services upgrades and technology. Beyond infrastructure losses, these cuts eliminate many multi-mission mission service upgrades and technology initiatives directed to on-orbit and future Code S and Y missions, ranging from SWIFT & GPM to NGST & Sensor Webs. The elimination of such funding will significantly erode GSFC Civil Servant competencies in leading new mission service definitions and developments, both contracted and in-house.

# Scientist's Expert Assistant (SEA) Overview

*The SEA is the front end of a black-box autonomous mission control system which enables the scientist to specify his/her goals. The SEA is an intelligent software interface to guide an astronomer through the specification of an observation in scientific terms rather than mission parameters. It has been infused and is being used at the STScI.*